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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,180	05/25/2005	Werner Teschner	R.303058	8529

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ALEXANDRIA, VA 22314

EXAMINER

HOGAN, JAMES SEAN

ART UNIT	PAPER NUMBER
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3752

MAIL DATE	DELIVERY MODE
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06/01/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/521,180

Applicant(s)

TESCHNER ET AL.

Examiner

James S. Hogan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-36 is/are pending in the application.
- 4a) Of the above claim(s) 23-29 and 34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 17-19, 22, 30-33, 35 and 36 is/are rejected.
- 7) ☐ Claim(s) 20 and 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1/14/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Claims 23-29 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on April 25 2007. Claim 34 has also been added to the claims being withdrawn by the Examiner, as it claims a non-elected species.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 35 and 36 are rejected under second paragraph of 35 U.S.C. 112.

Claims 335 and 36 recite the limitation "the fine machining" in line two of both claims.

There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17-19, 22, and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,417,694 to Claxton et al in view of 4,509,803 to Takenaka et al.

Referring to claim 17, Claxton et al teaches a fuel injection valve (having a body, valve needle (122), valve seat (126), valve-sealing face (below 124). Claxton does not teach microscopic etchings on the valve sealing face. Takenaka et al teaches microscopic etching for use on sliding members, specifically for use on a valve guide (or member) as well as a mechanical seal (Col. 5, lines 14-23). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the sealing face of Claxton et al with the microscopic etchings of Takenaka et al in order to improve sealing on the valve member as well as provide lubrication to the injection valve. As per claim 18 Takenaka et al teaches etchings separate from each other. As per claim 19, Takenaka et al teaches indentations as dimples (microbores). As per claim 22, Takenaka et al teaches making the indentations purposeful for sealing at a spacing from one another that can be calculated from a specified populace of 1000 to 100,00 per mm^2 , which calculates to, at the low end of 1000 micropores per mm^2 , to 32 μm between dimples. As per claim 30 and 31, Takenaka et al teaches (Col. 5, lines 8-13), again for sealing specifications, a depth (CV_k) of 0.5 μm or less, however does not teach a range of between, 0.5 μm to 50 μm , or 3 μm to 20 μm however, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have specified a range for the depth of a dimple from between 0.5 μm to 50 μm , or 3 μm to 20 μm , since it has been held that where the general conditions for a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. As per claim 32, Takenaka et al teaches (Col. 5, lines 8-13), again for sealing specifications, a width (or diameter) of indentations as being between

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5 μm and 100 μm , specifically between 10 μm and 50 μm . As per claim 33, the microbores of Takenaka et al are formed by grinding (Col. 4, line 4, line 24-36) which can argued as being described as spark erosion.

Allowable Subject Matter

Claims 20 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure is as follows:

U.S. Patent No. 6,318,643 to Cooke

U.S. Patent No. 5,885,690 to Sada

U.S. Patent No. 5,333,954 to Noguchi et al

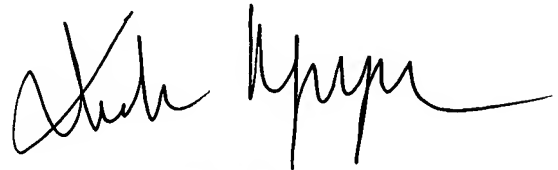
U.S. Patent No. 6,047,905 to Honda et al

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Hogan whose telephone number is (571) 272-4902. The examiner can normally be reached on Mon-Fri, 7:00a-4:00p EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin P. Shaver can be reached on (571) 272-4720. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JSH
5/18/2007



DINH Q. NGUYEN
PRIMARY EXAMINER